



PANIC ANXIETY AND PRIOR-MATHEMATICS ACHIEVEMENTS AS CORRELATES AMONG JUNIOR SECONDARY SCHOOL CERTIFICATE MATHEMATICS PERFORMANCES

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ABSTRACT

This study determined the correlates of panic anxiety and prior-mathematics achievements among junior secondary school certificate examination (JSSCE) in Nigeria. Two research questions and two hypotheses guided the study. Expo-facto research design was adopted for the study. The sample consisted of 630 students from a population of 6405 students. Test anxiety questionnaire (TAQ) that assessed students' grades obtained from the JSSCE in Mathematics and students grades obtained from their prior-mathematics achievement (Mock exams) were the instruments used for the study. The data collected were analyzed using Pearson product moment correlation. Result of the study revealed that panic anxiety and prior mathematics achievement had a relative influence on student's achievement in the examination. It was recommended that students should be exposed to anxiety reduction activities and that the JSSCE should be school-based so that individual schools can handle it using teachers which the students are already acquainted with.

KEYWORDS: Panic anxiety, Prior-mathematics achievements (Mock), Correlation, Junior secondary school certificate examination (JSSCE).

INTRODUCTION:

Education is the most important tool that offers inner and outer strength to a person and the society at large. The National Policy on Education (Federal Republic of Nigeria, 2013) through the national educational goals expressed that the acquisition of appropriate knowledge, skills, competencies, development of mental, physical and social abilities equip individuals to live in and contribute meaningfully to the development of the society. Alade (2004), observed that the primary concern of education is the elevation of human conditions. In the same vein, Oderinde (2005), opined that all over the world, education is the key to development which clearly demonstrated that education play vital roles in the development of the individual, society and the nation as a whole. The development of any society, which is linked on educational progress cannot be achieved without due attention on science and technology. Basic discipline in the sciences must reasonably be encouraged in giving attention to Mathematics which is the bedrock of all sciences.

The objectives of teaching mathematics in secondary schools make it very important as a foundation subject for success in further academic endeavour and manpower development. In view of this, the learning of mathematics in schools, as observed by Odili (2006) represents first, a basic preparation for adult life and secondly a gateway to a vast array of career choices. In this respect, Iji (2007) maintained that any country that aspires for national growth in science, industries, and technology must not neglect mathematics. This is in view of the multi-dimensional values of mathematics in virtually all facets of human development and experience. Thomaskutty and George (2007) accentuated the versatile nature of mathematics by identifying seven educational values of mathematics which include: Practical or Utilitarian values, Disciplinary values, Cultural values, Social values, Moral values, Aesthetic values and Recreational values. Roles of mathematics according to Oderinde (2005) in physical and agricultural sciences, engineering, aircraft, computer, textile, warfare, industries and weather forecasting are numerous.

In Africa, the current performance of student in mathematics is poor (Aduda, 2003). The situation has been posing serious problem for the students in the Senior Secondary classes partly as a result of the carry over effects of the negative attitudes which they have towards Mathematics in Junior Secondary classes and ineffectiveness on the part of the teachers (Okiru & Orum, 2013; Adu, Ojelabi & Hammed, 2009). The observed rates of student's performance in May/June WASSCE general mathematics in Nigeria (Nasarawa State) from 2004-2013 as indicated in Table 1 tend to support this claim.

Table 1: Performance Rates by Credit (A1- C6), Pass (D7 – E8), Fail (F9), and Unreleased Results (2004-2013).

Year	Credit (%)	Fail (%)	Pass (%)	Unreleased (%)
2004	15.55	39.91	31.18	13.36
2005	18.50	37.99	41.29	2.23
2006	24.42	14.74	53.47	7.36
2007	41.62	7.87	36.88	13.63
2008	40.30	15.53	32.37	11.53

Year	Credit (%)	Fail (%)	Pass (%)	Unreleased (%)
2009	41.86	23.62	30.50	4.02
2010	30.27	24.23	41.79	3.71
2011	26.96	22.79	44.02	6.23
2012	38.54	14.97	40.69	5.80
2013	41.39	13.14	38.68	6.79

Table 2: KCSE Performance in Mathematics

Year	9991	2000	2001	2002	2003	2004	2005	2006	2007	2008
Mean Score	12.23	16.61	18.72	13.23	18.25	16.24	17.62	12.24	16.26	18.73

Table 2 demonstrate Kenya Certificate of Secondary Education (KCSE) performance in mathematics.

The figures in these tables show that students' achievement in the subject (Mathematics) is poor; this should be a concern to policy makers, administrators, principals, teachers, parents and students themselves. The current performance of student in mathematics has posed very serious concern to the society at large, especially when considered against the resources spent each year in training students and the roles of mathematics in science and technology (Aduda, 2003; Okoi, 2015). Teachers and educational planners in the subject have exhausted available strategies including the improvement of teaching methods, making the subject compulsory and organizing retraining programs without recording significant improvement.

Studies exists that show test anxiety and prior-mathematics as possible correlates among students academic performance. Ben (2011), in a study, to determine the influence of students' personality characteristics on their academics performance in agricultural sciences in secondary school in Uyo Municipality concluded that anxiety influence academic performance of students. This finding meant that higher anxiety scores brought about low academic performance, while low anxiety scores were responsible for high academic performance.

In a similar study but earlier studies Sharif and Armitage (2004) and Marakinyo (2006) it was equally discovered that test anxiety influenced students' CGPA. Other studies supporting panic anxiety as an inverse correlates of academic performance are of those Olaitan (2012), Muhammad and Naem (2013) and Okoi (2015).

Okiru and Orum (2013), investigated on junior secondary school certificate examination results as predictors of students' performance in Mathematics at the senior secondary school certificate Examinations in Benue State of Nigeria and found that a positive significant relationship existed between the overall performance of students at the JSS level and their overall performance at the SS level. Adeyemi (2006) found junior secondary school certificate examination results as a good predictor of performance at the senior secondary certificate examinations. Studies by Ubi (2009), Okoi (2015) and Muhammad, Riffa and Rashida (2011) reveal positive correlation between prior-Mathematics achievement and

academic performance with conclusion that prior-mathematics performance has adverse effects on academic performance. A good number of researchers have exhaustively studied test anxiety and prior-mathematics as possible correlates among students academic performance, but there seem to be scanty research connecting panic anxiety and Mock performance (prior-achievement) with students' academic achievement. Thus, there is need to research on panic anxiety and prior-mathematics achievements as correlates among junior secondary school certificate mathematics performances.

Panic anxiety: Panic anxiety in this study, is a sudden strong feeling of fear or nervousness about school environment, it is an apprehension of danger, or impending disaster that arises when test examination is about to be taken or being taken. The feeling of "will fail", "how will examination look like", the teacher with the care is coming close to me" etc.

Prior-mathematics achievement: is students' previous performance in mathematics not too long before the main examination was taken.
Statement of Problem

The current performance of student in Mathematics has posed very serious concern to the governments and parents, especially when considered against the resources spent each year in training the students and retraining teachers. Because of the dramatic decline in performance in Mathematics for both primary and secondary school students in the country, the need for change has arisen. It is therefore imperative to find out the extent to which test anxiety and prior-performance in Mathematics may predict performance in junior secondary school certificate examination in Mathematics.

Research Questions:

The following research questions were raised to address the problem of the study.

- What is the nature of relationship existing between panic anxiety and mathematics performance of Junior Secondary school students?
- To what extent does prior-achievement in Mathematics predict their mathematics performance?

HYPOTHESES:

HO₁: Panic anxiety does not significantly relate with Mathematics performance of secondary school students.

HO₂: Prior-Mathematics performance does not significantly predict students' final performance in Mathematics examination.

METHODOLOGY:

The study area was in Nigeria. The design adopted for the study was expo-factor. The design was appropriate because the study did not involve manipulation of variables but dependent on the existing scores (JSSCE scores) obtained from the different schools. The population for the study comprised 6405 junior secondary school three (JSSIII) students (3285 males and 3120 females) in the 58 public secondary schools in Nigeria. The sample for the study was 630 students (10% of the population) selected through stratified random sampling technique. The subjects were selected proportionately using a table of random numbers.

Three instruments were used for the study. The first was a questionnaire called test anxiety questionnaire (TAQ) adopted from Okoi (2015) and adjusted to meet the needs of the paper. The (TAQ) was divided into sections A and B section. Section A elicited personal data while section B was made up of 7 items on a Likert type scale eliciting information on the panic anxiety type. The second instrument was JSSCE 2014 result sheet on Mathematics from which the students' scores were obtained. The third instrument was Mock 2014 result sheet on Mathematics from which the students' scores were obtained. The estimates reveal reliability coefficient of .78 for Panic anxiety. Data were collected by the researchers and some research assistants recruited from among the graduate students of the faculty of Education, University of Calabar. The hypothesis was tested using Pearson product moment correlation.

RESULTS:

HO₁: Panic anxiety does not significantly relate with mathematics achievement among junior secondary school students.

HO₂: Prior-mathematics achievement does not significantly predict Mathematics achievement among junior secondary school students.

Table 3: Pearson Product Moment correlation analysis of the relationship between students panic anxiety and their performance in certificate mathematics examination (N=630).

Variables	$\bar{X}$	SD	r	Sig of r
Panic Anxiety	21.99	4.89	-.756*	0.000
Performance in mathematics	58.43	10.62		

* Significant at the 0.05 level of significance.

The result revealed that, the calculated r-value of -0.736 in its absolute term was greater than the critical r-value of 0.088 at 0.05 level of significance with 628 degrees of freedom. This means that, there was an inverse very strong significant relationship between panic anxiety and Junior secondary school certificate Mathematics performance of Junior secondary school three students "that is" the higher the level of panic anxiety among junior secondary school three students the lower their academic performance in Mathematics. Based on this result the null hypothesis was rejected at the 0.05 level of significance. That is, panic anxiety significantly predicted Mathematics achievement among junior secondary school students.

Table 4: Pearson Product Moment correlation analysis of the relationship between students' prior mathematics performance and their performance in certificate mathematics examination (N=630).

Variables	$\bar{X}$	SD	r	Sig of r
Prior mathematics ach.	60.80	13.75	-.783*	0.000
Performance in mathematics	58.43	10.62		

* Significant at the 0.05 level of significance.

The result in Table 4 revealed that; "the calculated r-value 0.783 in its absolute term was greater than the critical r-value of 0.088 at 0.03 level of significance and 62 degree of freedom. This means, that, there was a positive significant relationship between prior mathematics performance and certificates mathematics performance of JSS 3 students. That is, the higher the prior mathematics performance (MOCK exams) among JSS 2 students, the higher their academic performance in JSS 3 certificate mathematics. Based on the result the null hypothesis was rejected and the alternative upheld.

DISCUSSION:

The findings of the study indicated that, panic anxiety significantly influence academic achievement in mathematics of JSS 3 students. That is, the higher the level of panic anxiety among junior secondary school three students, the lower their academics performance in JSSCE, and vice versa. This replicates the study of Ben (2011), who found out that, there was a significant relationship between anxiety and academic performances of secondary school students. The result is also the same with the findings of Olaitan (2012), who found out that, over all, low anxiety students had higher CGPA's than high anxiety students, and also describe examination as a stressor and consider failure in examinations as being attributable to student's fear of the consequences of failure itself. These authors opined that examination is ego threatening and thus creates uncertainty in candidates as they think of the consequences of failing. This finding replicates other studies like Marakinyo (2006), Dobson (2013), Sharif and Armitage (2004), Muhammed and Naem (2013), Okoi (2015), Sridevi (2013).

The second finding of this study was that, there is a positive significant relationship between prior Mathematics performance (Mock) test and Mathematics performance (future performance) of junior secondary school three students. In other words, Mathematics Mock performance (Prior Mathematics performance) scores predicted final or future performance in a mathematics examination. This replicate the study of Mohammad, Riffa and Rashida (2011), who found out, that prior-achievement, is the best predictor of academic achievement. The result is also the same with Ubi (2009) and Nascimento (2008).

The possible explanation for the nature of results may be the issue of ego threatening nature of anxiety as presented in literature. There are some uncertainty and failure factors like self-doubt apprehension, Moodiness and irritability and the outcome of failing an important examination. Most students see failing examination as an indication of lack of future prospects of social and economic success. When they excessively preoccupy themselves with the consequences of failing an examination their ego-valued needs create stressful examination. Mathematics as a school subject is highly eschewed by most students, this students see the subject as a very difficult one that is meant for only highly intelligent. This has created negative reactions and anxiety for student during examination. Most time, the students develop hatred for a subject creates restlessness, nervousness, lack of self-control, palpitation, excessive sweat before and during examination. This makes it imperative for some control measures to be put in place by government and school authorities.

CONCLUSION:

It is concluded that Mathematics performance could be predicted from personal-ity characteristics of the learner and situational factors of the learner

RECOMMENDATIONS:

Based on the findings, the following recommendations are considered important for effective performance of students in mathematics.

- Individual schools can organize anxiety reduction activities for students. This can be done by involving the students in relaxation exercises, jogging, and training them on how to be thinking about calm and comfortable experiences.
- Teachers can also council students about the importance of mathematics

examination with ease in the other hand.

3. JSSCE should be made a school-based examination. If students could pass school-based mathematics examination but fail their external examination in the same subject using the same syllabus, then something is wrong with externalizing the examination. Teachers could be allowed to set and administer JSSCE examination under good supervision.

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